

Our Reference: VEC-138-B (RUS0143)

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellants:	Michael Powers, et al.
Serial Number:	10/582,735
Filing Date:	March 13, 2007
Confirmation No.:	5019
Examiner/Group Art Unit:	Brandon Michael Rosati/3744
Title:	COLLAR RIB FOR HEAT EXCHANGER HEADER TANKS

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter the following Appeal Brief in the appeal filed June 16, 2011.

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I. REAL PARTY IN INTEREST

The real party in interest is Assignee Valeo, Inc., a corporation having an office and place of business at 4100 North Atlantic Blvd, Auburn Hills, MI, 48326, USA.

II. RELATED APPEALS AND INTERFERENCES

Appellants and the undersigned attorneys are not aware of any appeals or any interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 10-12, 14, and 17-19 are the claims on appeal. *See*, Appendix.

Claims 10-12, 14, and 17-19 are rejected.

Claims 1-9, 13, 15, and 16 have been cancelled.

IV. STATUS OF AMENDMENTS

In response to the Final Office Action of January 19, 2011, no amendment pursuant to 37 C.F.R. § 1.116 was filed.

V. SUMMARY OF CLAIMED SUBJECT MATTER

In this summary of claimed subject matter, all citations are to the specification of United States Patent Application 10/582,735. Further, all citations are illustrative, and support for the cited element may be found elsewhere in the specification.

Independent claim 10:

A headering arrangement for a heat exchanger (20) for use in automotive applications includes a heat exchanger body part; a plastic heat exchanger tank part (1); a header (2); and a plurality of tubes (27) extending from the heat exchanger body part (see Figs. 1, 2 and 4a-4c and page 10, lines 5-13). A header pan (23) is disposed at an end of the plurality of tubes (27), wherein the header pan (23) i) includes a plurality of slots for receiving the plurality of tubes (27), ii) is a flat pan (see Figs. 3a-3d and 10 and page 10, lines 15-21), and iii) defines a plurality of collars, each of the plurality of collars forming a ferrule surrounding and in contact with a respective one of the plurality of tubes (27) (see Figs. 3a-3d and 10 and page 10 lines 15-30). A tank foot (24) is at the end of the heat exchanger tank part. The headering arrangement also includes a gasket (25). Each slot of the plurality of slots is formed with a respective one of the plurality of collars to accept a respective one of the plurality of tubes (27) (see Figs. 3a-3d and 10). The plurality of tubes (27) passes through the plurality of slots, abuts the tank foot (24), and directly maintains the tank foot (24) in place (see Figs. 3a-3d and 10 and page 10, lines 15-22). The plurality of collars is inverted in relation to a line of extension of the plurality of tubes (27) (page 13, lines 2-4). The line of extension is defined by a direction vector that extends away from the respective one of the plurality of tubes (27), parallel to a central axis of an end segment of the respective one of the plurality of tubes (see Figs. 3a-3d and 10, and page 10 lines 15-22 and page 13 lines 2-5).

Independent claim 19:

A headering arrangement for a heat exchanger (20) for use in automotive applications includes a heat exchanger body part; a plastic heat exchanger tank part (1); a header (2); a plurality of tubes (27) extending from the heat exchanger body part (see Figs. 1, 2 and 4a-4c and page 10, lines 5-13); and a header pan (23) disposed at an end of the plurality of tubes (27). The header pan i) includes a plurality of slots for receiving the plurality of tubes (27), ii) is a flat pan, (see Figs. 3a-3d and 10 and page 10, lines 15-21), and iii) defines a plurality of collars, each of the plurality of collars forming a ferrule surrounding and in contact with a respective one of the plurality of tubes (27), and wherein the header pan further includes at least one flat medallion (22) (see Figs. 3a-3d and page 10 lines 15-30). A tank foot (24) is at the end of the heat exchanger tank part; and a gasket is essentially flat in shape (see page 10, lines 27-28). Each slot of the plurality of slots is formed with a respective one of the plurality of collars to accept a respective one of the plurality of tubes (27) (see Figs. 3a-3d and 10). The plurality of tubes (27) passes through the plurality of slots, abuts the tank foot (24), and directly maintains the tank foot (24) in place (see Figs. 3a-3d and 10 and page 10, lines 15-22). The plurality of collars is inverted in relation to a line of extension of the plurality of tubes (27) (page 13, lines 2-4). The line of extension is defined by a direction vector that extends away from the respective one of the plurality of tubes (27), parallel to a central axis of an end segment of the respective one of the plurality of tubes (27) (see Figs. 3a-3d and 10, and page 10 lines 15-22 and page 13 lines 2-5).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants request review of the following grounds of rejection on appeal:

- 1) Whether claims 10-12, 14, and 17-19 are unpatentable under 35 U.S.C. § 103(a) as being obvious in view of Moreau (U.S. Patent No. 6,749,015, referred to herein as “Moreau”) in view of Dey, et al. (U.S. Publication No. 2003/0217838, referred to herein as “Dey”), in further view of Kun et al. (U.S. Patent No. 4,023,618, referred to herein as “Kun”).

VII. ARGUMENTS

A. Whether claims 10-12, 14, and 17-19 are unpatentable under 35 U.S.C § 103(a) as being obvious in view of Moreau, Dey, and Kun.

The Office states that Moreau discloses in Figures 1 and 3 all the claimed limitations except an essentially flat gasket, a plastic tank, or the plurality of tubes directly maintaining the tank foot in place. The Office further states that it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of Moreau with the essentially flat gasket of Dey because adding the gasket would help to ensure a tight fluidly sealed system. The Office also states that it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of Moreau and Dey with the directly maintained tank foot of Kun because this configuration would ease assembly and provide a more cost effective and simpler heat exchanger unit.

The Appellants respectfully disagree with the Office's characterization of Kun. It is submitted that Kun's plurality of tubes 60 does not **abut the tank foot** (which corresponds with reference numerals 70, 72, not reference numeral 67) and does not **directly** maintain the tank foot in place, as recited in Appellants' claims 10 and 19. The Office (at page 3 of the Final Office Action) states that the combination of elements 60 and 61 (the stacked array of channel elements/tubes 60 and fins 61) is "...the tube, and thus the tank foot is directly maintained by the tube." Appellants strongly disagree with this interpretation of Kun, and respectfully submit that this interpretation is in direct contrast with the teachings of Kun. Kun specifically states, at Col. 12, lines 9-12, that "...heat transfer fins 61 are joined to the edge wall portions of the channel elements and extend generally outwardly therefrom." This statement clearly indicates that the channel elements/tubes (i.e., the array of elements is labeled 60) are **separate and distinguishable** from the fins 61. The statement also clearly indicates that the fins (not the inner tank member) are in direct contact with the channel elements/tubes. Simply because the fins are *joined to* the channel elements/tubes does not mean that the fins become the channel elements or vice versa; rather, as set forth in Kun, the fins extend

outwardly from the channel elements. While the joined components may form a single unit, the fins are still the fins and they still extend outwardly from the channel elements. It is submitted that the fins are the fins, whether attached to the channel elements or not. As illustrated very clearly in Fig. 10 of Kun (reproduced herein), it is the fin 61 that abuts the inner tank member 67. The channel element is in direct contact with the fin, but the channel elements itself does not abut the inner tank member 67 and it does not directly maintain the inner tank member 67 in place.

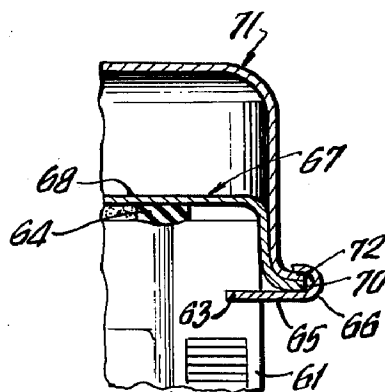


FIG. 10

Kun's Fig. 10

Still further, it submitted that Kun's fins 61 do not abut the tank foot 70, 72 or directly maintain the tank foot 70, 72 in place, as recited in independent claims 10 and 19. Kun clearly states that the fins 61 are positioned against a portion of the vertically disposed wall of the inner tank member 67 (Col. 12, lines 50-55). It is respectfully submitted that the vertical portion of the inner tank member 67 shown abutting the fins 61 in Fig. 10 is clearly not the tank foot. Although Appellants believe that no part of the inner tank member 67 is functionally similar to Appellants' tank foot, assuming *arguendo* something in Kun had to be compared, flange member segment 72 would visually appear to be the most similar element to the tank foot. In Appellants' application as filed, it is clear that the tank foot 4 is the **flange portion** of the plastic tank 1. It is

submitted that one of ordinary skill would expect a tank foot to at least be at **an end of the tank** as claimed – not in the middle of the wall abutted by Kun's fins 61 as shown in Fig. 10 above. Further it is clear from the context of the application as filed that Appellants' use of the phrase "flange or foot" (Page 2, lines 25-26, and line 30) was tautological, and therefore the two words are used to refer to the same thing. As such, one of ordinary skill would expect the tank foot to be a flange at an end of a tank. Kun's fins 61 do not abut a tank foot or flange member segment 72, or even intervening flange member segment 70, and do not directly maintain the tank foot in place, as recited in Appellants' independent claims.

For all these reasons, it is submitted that contrary to the Office's assertions, Kun fails to supply the deficiencies of the combination of Moreau and Dey.

Furthermore, Kun's channel elements/tubes do not extend through the slots in the header plate/pan. This is due, at least in part, to the stacked configuration disclosed by Kun. The addition of the fins prevents the channel elements/tubes from protruding through the slots. As such, if one skilled in the art were to combine Kun with Moreau and Dey as suggested by the Office, he/she would also be led to include the fins, at least, for example, for the reasons set forth by the Office on page 3 of the Final Office Action. This structure, however, would eliminate the plurality of tubes passing through the slots in the header pan, and thus it is submitted that this does not teach, suggest or otherwise render obvious the Appellants' claims (which recite, in part, "the plurality of tubes passes through the plurality of slots...").

It is still further submitted that Moreau discloses an aluminum heat exchanger that is sealed by brazing (Col. 6, lines 65-67). In sharp contrast, if Appellants' disclosure has utility in a gasket, it is due to the fact that the tank is plastic (i.e., not in metal as in Moreau) and that the assembly between the tank and the header pan is obtained by crimping and not brazing. Thus, a gasket may improve the seal in the assembly disclosed by Appellants, but not that disclosed by Moreau. As such, it is respectfully submitted that no person of ordinary skill would have attempted to improve the seal of a brazed assembly (Moreau) by the addition of a gasket as proposed by the

Office. The combination proposed by the Office would have required a greater expenditure of time, effort, and resources than Moreau's brazed assembly, with no reasonable expectation of improvement in sealing over brazing. The proposed modification thus would have amounted to extra work and greater expense for no apparent reason. Moreover, even if a person of skill in the art had been attempting to improve sealing of the Moreau tank to header joint, that person would have looked for a modification that would be more compatible with an all-brazed manufacturing process; the skilled artisan likely would have looked away from gaskets. As such, it is submitted that the proposed combination of Moreau with Dey also fails to support the rejection of obviousness.

For at least all the reasons stated above, it is submitted that Appellants' invention as defined in independent claims 10 and 19, as well as in those claims depending therefrom, is not anticipated, taught or rendered obvious by Moreau, Dey, and Kun, either alone or in combination, and patentably defines over the art of record.

VIII. CONCLUSION

The Appellants respectfully submit that claims 10-12, 14, and 17-19 as currently pending fully satisfy the requirements of 35 U.S.C. §§ 102, 103 and 112. Accordingly, Appellants respectfully request that the Board of Patent Appeals and Interferences find for the Appellants and reverse the rejection of each of Appellants' claims 10-12, 14, and 17-19 under 35 U.S.C. § 103(a) as being unpatentable over Moreau in view of Dey and Kun. In view of the foregoing, favorable consideration and passage to issue of the present application is respectfully requested.

Respectfully submitted,

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JRK/JBD/slc

IX. CLAIMS APPENDIX

1 - 9. (Canceled)

10. (Previously presented) A headering arrangement for a heat exchanger for use in automotive applications, comprising:

a heat exchanger body part;

a plastic heat exchanger tank part;

a header;

a plurality of tubes extending from the heat exchanger body part;

a header pan disposed at an end of the plurality of tubes, wherein the header pan i) includes a plurality of slots for receiving the plurality of tubes, ii) is a flat pan, and iii) defines a plurality of collars, each of the plurality of collars forming a ferrule surrounding and in contact with a respective one of the plurality of tubes;

a tank foot at the end of the heat exchanger tank part; and

a gasket;

wherein:

each slot of the plurality of slots is formed with a respective one of the plurality of collars to accept a respective one of the plurality of tubes;

the plurality of tubes passes through the plurality of slots, abuts the tank foot, and directly maintains the tank foot in place;

the plurality of collars is inverted in relation to a line of extension of the plurality of tubes; and

the line of extension is defined by a direction vector that extends away from the respective one of the plurality of tubes, parallel to a central axis of an end segment of the respective one of the plurality of tubes.

11. (Previously presented) A headering arrangement for a heat exchanger as in claim 10, wherein the plurality of tubes extending from the heat exchanger body part has a length of: less than twice the thickness of the header plus the tank foot width of the header; or about twice the thickness of the header plus the tank foot width of the header.

12. (Previously presented) A headering arrangement for a heat exchanger as in claim 11, wherein the header pan further comprises at least one flat medallion.

13. (Canceled)

14. (Previously presented) A headering arrangement for a heat exchanger as in claim 12, wherein the gasket is essentially flat in shape.

15 - 16. (Canceled)

17. (Previously presented) A headering arrangement for a heat exchanger as in claim 10, wherein the header pan further comprises at least one flat medallion.

18. (Previously presented) A headering arrangement for a heat exchanger as in claim 10, wherein the gasket is essentially flat in shape.

19. (Previously presented) A headering arrangement for a heat exchanger for use in automotive applications, comprising:

- a heat exchanger body part;

- a plastic heat exchanger tank part;

- a header;

- a plurality of tubes extending from the heat exchanger body part

- a header pan disposed at an end of the plurality of tubes, wherein the header pan i) includes a plurality of slots for receiving the plurality of tubes, ii) is a flat pan, and iii) defines a plurality of collars, each of the plurality of collars forming a ferrule surrounding and in contact with a respective one of the plurality of tubes, and wherein the header pan further includes at least one flat medallion;

- a tank foot at the end of the heat exchanger tank part; and

- a gasket essentially flat in shape;

- wherein:

- each slot of the plurality of slots is formed with a respective one of the plurality of collars to accept a respective one of the plurality of tubes;

- the plurality of tubes passes through the plurality of slots, abuts the tank foot, and directly maintains the tank foot in place;

the plurality of collars is inverted in relation to a line of extension of the plurality of tubes; and

the line of extension is defined by a direction vector that extends away from the respective one of the plurality of tubes, parallel to a central axis of an end segment of the respective one of the plurality of tubes.

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X. EVIDENCE APPENDIX

None.

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XI. RELATED PROCEEDINGS APPENDIX

None.